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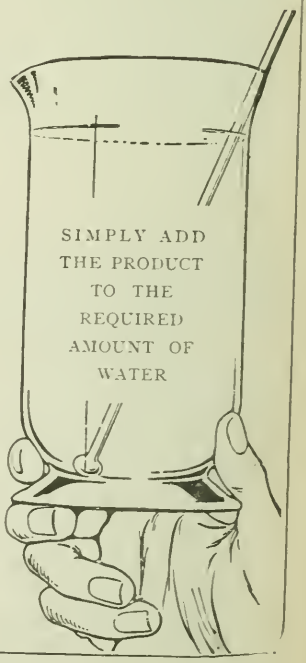

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FIFTH SERIES. No. 8. OCTOBER, 1922

Original Communications.

—o—

A CASE OF FIBROCYSTIC DISEASE OF THE TIBIA; TREATED BY RESECTION AND BONE-GRAFTING.*

By William Pearson.

OSTEITIS Fibrosa or Fibrocystic disease of bone is a rare disease, but one of much interest to pathologists and surgeons. The condition receives scant notice in surgical text books, and its etiology is obscure. It has, however, been thoroughly reviewed in excellent papers by Bloodgood[1] and Elmslie[2].

From a study of 89 cases classified as bone cysts Bloodgood distinguished two main groups :

(*a*) True bone cysts, which have a definite relation to osteitis fibrosa, and

(*b*) Cysts in the medullary cavity due to other conditions.

The first group contained 69 cases, which he divides into six varieties :

1. Single cyst, bony shell, no connective-tissue lining.

Read in the Section of Surgery, Royal Academy of Medicine in Ireland, April 28th, 1922.

2. Single cyst, with definite connective-tissue lining.
3. A small cyst or cysts in a solid mass of osteitis fibrosa.
4. No cysts, the bone shell being filled with a solid mass of osteitis fibrosa.
5. Multilocular cysts.
6. Miscellaneous.

"These cases," he says, "have in common the presence of an inflammatory tissue in the medullary cavity (osteitis fibrosa), which, with or without cyst formation, is replacing the marrow and cancellous bone, producing absorption of the outer table, and associated with more or less distension of the thin bone shell. Unless there has been a pathological fracture, or the cysts are of huge size and long duration, the periosteum is normal and there is little or no new bone formation." "In a few of these cases, here and there, islands of cartilage are found . . . . . but cartilage is never present in sufficient quantity to justify the conclusion that the cyst is due to the liquefaction of a primary or original solid area of cartilage."

"The fluid content of the cyst is never distinctly hæmorrhagic: it is usually thin, dark brown in colour, and contains microscopically blood pigment and blood cells." Giant-cells are often found near the lamellae of the bone shell, but except in one or two cases, have never been found in sufficient numbers to characterise the picture as a giant-cell sarcoma. They are to be regarded as giant-cell osteoclasts producing bone absorption.

The condition may arise in many situations, but occurs most often in the upper ends of the humerus and femur, and in the tibia.

All observers agree that it is essentially a disease of youth. It usually starts before the age of 15, but is so insidious in its onset and progress, that it may not be recognised until a much later period. Only five of the 69 cases reviewed by Bloodgood were over 20 years of age when the disease was first noted.

The clinical manifestations in their order of frequency are pathological fracture, pain and swelling. Swelling will be more frequently noted when the disease affects a superficial bone such as the tibia. Disability of the limb may be noted,

Fig. 1.

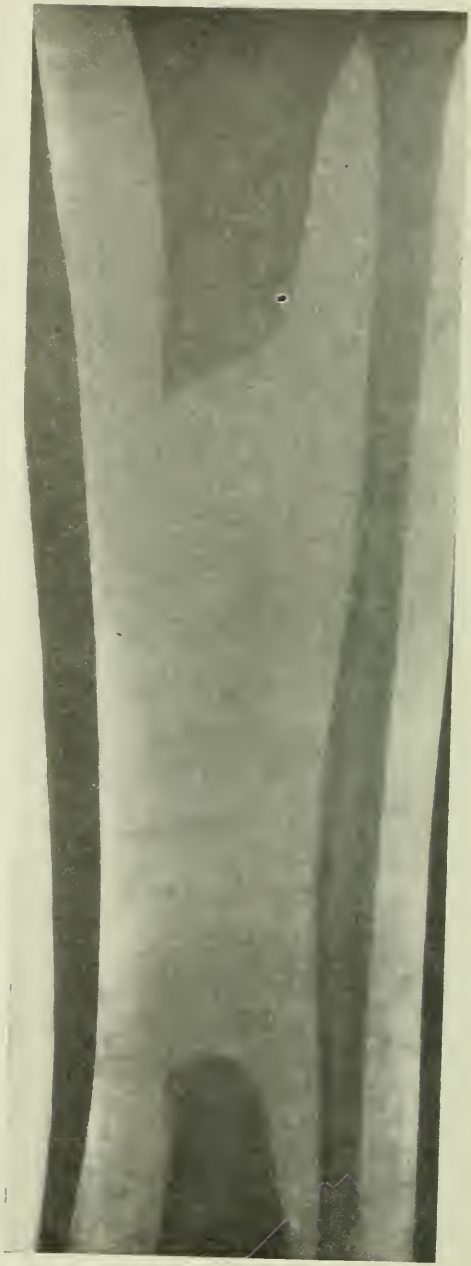


Fig. 2.

Fig. 3.

Fig 1.

but usually only after an injury or a definite fracture. The condition cannot be differentiated without the aid of skiagrams.

Theories differ widely in regard to the etiology: Virchow[3] considered that the cysts developed from enchondromata by degeneration.

Bloodgood and other observers regard the condition as an inflammatory one, the medullary tissue being replaced by connective tissue with or without cyst formation. Consequently, he suggests the terms chronic osteomyelitis cystica or solida as appropriate.

Elmslie discusses the matter at length, and considers that in the present state of our knowledge, we cannot decide whether fibrocystic conditions in bone constitute one disease or several. He rejects Virchow's theory, and does not agree that the condition is inflammatory. He suggests as a working hypothesis "that there is a general disturbance in the processes of growth or alteration in the bone. "That in the course of this there is (1) a fibrous metaplasia of the marrow; (2) an excessive formation and activity of the giant-cells; (3) an active absorption of bone, with coincident formation of new bone and cartilage. That in places the fibrous metaplasia may be most evident leading to the formation of fibrous masses; in other places cysts may be produced, either by the action of giant cells, or by degeneration in the fibrous tissue; and that in still other places there may be abundant formation of bone—which may or may not be calcified—and of cartilage or fibrocartilage. . . . . "

The case recorded here is that of S.A., male, aged 20 years, who came under my care suffering from a swelling of the left leg which had been regarded as a sarcoma of the tibia. The swelling had been first noticed four years previously, it had slowly increased in size, and had only recently become slightly painful. Examination showed a fairly smooth fusiform swelling in the middle third of the shaft of the tibia, with some anterior bowing of the bone. The swelling was slightly tender on firm pressure, and did not involve any of the soft tissues which were freely movable over it. The skin was normal and the function of the limb was not impaired.

The clinical symptoms and features of the case rendered

the diagnosis of sarcoma uncertain, and skiagrams showed the condition to be typical of fibrocystic disease (see Fig. 1).

A subperiosteal resection of the shaft of the tibia was performed, the bone being divided above and below the limits of the disease, and somewhat more than the middle third of the shaft was removed.

In order to determine what amount of regeneration would follow subperiosteal resection in the case of a young adult in the absence of sepsis no bone graft was inserted at this stage, and the wound was closed without drainage. Skiagrams taken one and two months after resection (see Figs. 2 and 3) showed that practically no new bone had formed, save in the neighbourhood of the upper segment from which a slender cone of ossification extended downwards for a distance of one inch. Elsewhere only very light flakes of bone were seen scattered here and there in the periosteal tube. It is interesting to note that these flakes all lay in the long axis of the periosteum.

Three months after resection a graft was taken from the crest of the right tibia and inserted as an intramedullary peg, being embedded inside the periosteal tube between the ends of the tibia. This tube had become thickened almost to the size of a normal tibia and on section was firm, smooth and homogeneous, with very little vascularity, giving one the impression of soft cartilage.

Nine months later the patient was able to walk well without support, and no deformity or want of symmetry could be detected.

The progress of the case may be seen by a study of the radiograms taken at intervals after operation. They demonstrate that although the graft was successful, and became firmly united to the tibia at each end, it shows little increase in size at the end of nine months, and that regeneration of a new tibial shaft has been effected chiefly by ossification which proceeded throughout the substance of the thickened periosteal tube in which the graft was embedded (see Figs. 4, 5, 6, 7, 8 and 9). This variation from the usual behaviour of a successful "bridge" graft is, I think, due to the fact that the periosteum between the ends of the tibia was intact

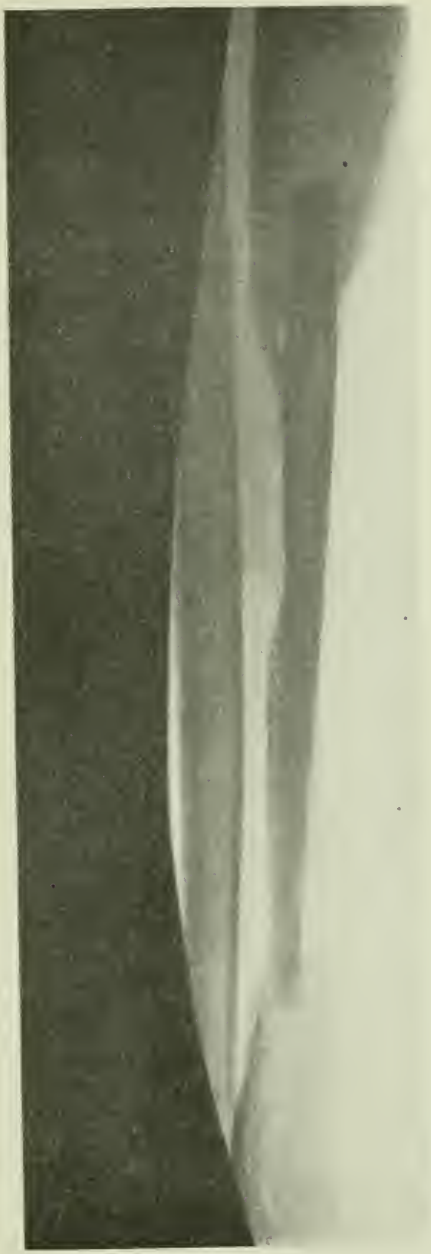


Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8.

in this case, but this does not mean that the new bone was developed directly from the periosteum.

The precise mode of action of the graft is open to question. A close study of the skiagrams suggests that it has been both osteogenetic and osteoconductive, chiefly the latter—and that the osteoblasts for the most part have been furnished by emigration from the ends of the tibia by way of the graft.

Examination of the gross specimen on section showed that the medulla and normal cancellous tissue were replaced by a spongy-looking mottled red and yellow substance, in which small translucent areas were present indicative of early cyst formation. Absorption of the cortex, and expansion and bowing of the shaft were also very evident. Microscopically the tissue consisted of a broken network of bone lamellæ, the spaces between which were filled with a fibrous connective tissue (osteitis fibrosa) in which minute cystic cavities were present in places. Here and there giant-cell osteoclasts were present, producing absorption of bone on the periphery of the lamellæ. The microscopic appearances were identical with those illustrated in the photo-micrograph which is reproduced from Bloodgood's communication.

DESCRIPTION OF PLATES.

Fig. 1. Osteitis fibrosa of tibia. The middle third of the shaft is expanded and presents a finely mottled appearance indicating irregular bone absorption, and suggesting the development of numerous small cavities or cysts in its substance. The cortex is greatly thinned along the anterior surface where the expansion is slightly irregular, but at no points has the disease broken through or invaded the periosteum. The disease involves a much greater extent of the anterior than of the posterior aspect of the bone. At either end it is limited by a zone of condensation which separates it from the normal medullary cavity; this is more marked at the lower end. The shaft shows a considerable degree of antero-posterior bowing.

Fig. 2. Tibia one month after subperiosteal resection of shaft. Very faint evidence of callus formation in connection with the upper segment.

Fig. 3. Two months after resection. A cone of callus is seen projecting from the upper end. Slight evidences of callus formation in the form of longitudinally arranged flakes of bone are seen scattered throughout the periosteal tube.

Fig. 4. Three weeks after grafting. The graft is united at each end to the tibia, but no trace of further bone formation in the periosteal tube.

Fig. 5. Eight weeks after grafting. The graft is practically unchanged, but there are signs of ossification beginning throughout the periosteal tube. The cone of ossification proceeding from the upper tibial segment has increased in length and thickness and shows longitudinal striation. A faint zone of rarefaction is seen round the lower end of the graft which suggests that it is becoming loose at this point, but subsequent skiagrams show that this is not so.

Fig. 6. Four months after grafting. The graft is firmly united to the tibia. The sharp edges of the graft are becoming smoothed off, and the extremities are losing definition and becoming merged in the structure of the tibia. Ossification is proceeding throughout the periosteal tube surrounding the graft; this ossification is not quite uniform near the upper end, where a few lighter areas are seen in the callus.

Fig. 7. Five months after grafting. Similar to Fig. 6, with ossification slightly more advanced. Daily massage had been employed for four weeks.

Fig. 8. Eight months after grafting. During the previous three months the leg had been encased in plaster of Paris and patient had been using crutches. Very little change noticeable.

Fig. 9. Nine months after grafting. During the previous month patient had been walking on the limb and receiving daily massage. The "periosteal" callus has increased in density and definition so that the normal outline and contour of the tibia have been restored. The differentiation between graft and callus is still quite distinct and a line of "demarcation" (Fig. 9) is seen between the two in places. This is due to the fact that the graft was covered with its own periosteum on this aspect, so that a fibrous membrane intervened between the bone of the graft and the ossifying periosteal tube. This would appear to indicate that grafts placed intraperiosteally should preferably be deprived of their own periosteal covering.

References:

1. Bloodgood: *Annals of Surgery*, August, 1910.

2. Elmslie: *British Journal of Surgery*, July, 1914.

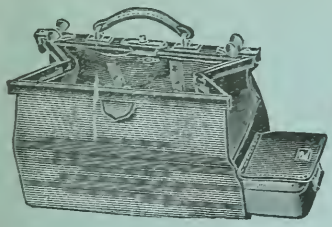
3. Virchow: *Virchow's Archives*, LXX, 502

Fig. 9.

Fig. 10.

Photomicrograph of Osteitis Fibrosa (Bloodgood). The wall of the cyst is lined by a well-marked layer of cellular fibrous connective-tissue, which is replacing the bony framework. Giant-cell osteoclasts may be seen in places producing bone absorption.

SURGICAL INSTRUMENTS.



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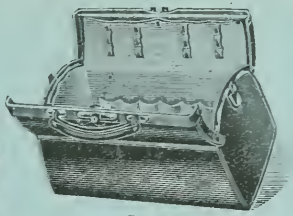

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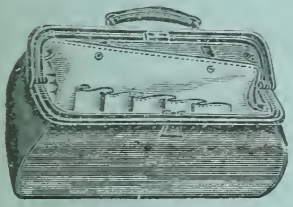

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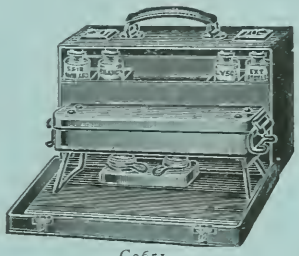

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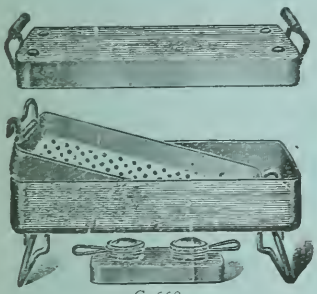

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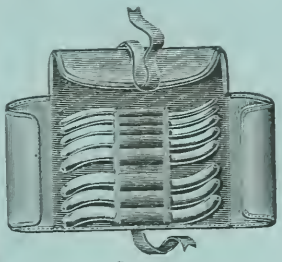

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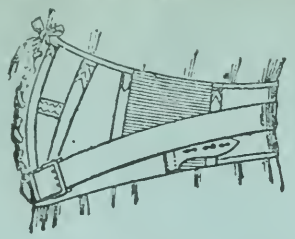

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AN IMPRESSION OF "DEEP ROENTGEN THERAPY" IN SURGICAL WORK.

(FRANKFURT-AM-MAIN).

BY WILLIAM DOOLIN.

THE deep therapy apparatus for surgical purposes is situated in one wing of the surgical klinik (350 beds), under the direction of Professor Schmieden, who has been in control here since 1919. The Rœntgen specialist in charge is Dr. Hohlfelder, working with the following staff, who are employed exclusively in the *x*-ray treatment of the surgical patients: three doctors (whole time assistants), four lady assistants, and six "Rœntgenschwestern" (*x*-ray sisters); each of these must spend not less than a six months' apprenticeship in the *x*-ray department, and may not work in any other department.

The *x*-ray department consists of one complete wing, of which the treatment rooms cover an area of about one-third the floor space. Four, or at most, six patients can be treated at a time. The *x*-ray diagnostic division, situated in the same wing, has an entirely different apparatus and personnel, under Dr. Hohlfelder's supervision. Plates and diagnosis reports are kept in the Bibliothek, or library.

It will be clearest if we follow the course of a patient who has been referred to the klinik as a suspected case of cancer of the stomach.

Such a patient passes through the following examination:—

1. The usual personal examination (physical and history taking) is carried out by at least two members of the surgical staff.
2. Differential diagnostic test meals, examination of fæces for occult blood, etc., are carried out by the resident pathologist.
3. A complete diagnostic Barium-meal *x*-ray examination is carried out by Dr. Hohlfelder: and a routine *x*-ray examination of thorax and bony skeleton is made for possible metastases.

4. A complete blood examination is made, and tabulated.
5. Patient is weighed, stripped.

When the results of these separate examinations have been scheduled into one "protocol," or case-history, the patient is submitted to the Professor, who, on the evidence before him, decides as to whether the patient is operable or not. The patient may be put at once into one of three classes of operability. 1.—Operable. 2.—Doubtful. 3.—Hopeless. If operable, he is admitted to hospital for operation and post operative *x*-ray treatment.

If in-operable, he is advised to stop in lodgings in the town, and to attend as an extern, for *x*-ray treatment.

Thus, all patients receive *x*-ray treatment, no matter to what class of operability they belong.

Treatment is carried out as follows :—

The patient comes fasting ; he receives morphin-scopolamin and then lies on the couch under continuous *x*-ray exposure for eight *x*-ray hours. (This may mean eight hours by the clock, with one tube, or four hours with two tubes.) The tumour area is irradiated for half the treatment period through the anterior abdominal wall. Then the patient is turned over on his face, and the tumour area is attacked from behind for the remaining four hours. The cancerous tissue thus receives a uniform irradiation of 2 m.a. per minute for eight hours. They calculate with an astonishing degree of mathematical accuracy the depths to which each individual ray will penetrate the tumour : the aim of the treatment is to expose each scrap of the tumour to a uniform irradiation during the eight hours. The *x*-ray dosage is estimated and controlled throughout by the Iontoquantimeter.

At the conclusion of the treatment, a new blood examination is carried out and tabulated. For the next two or three days the patient is often very sick and depressed : this reaction is due to two factors : (1) the massive *x*-ray dose has a markedly deteriorating influence on the circulating bloodcells, from which they take some three weeks to recover, and (2) into this weakened circulation are rapidly absorbed the toxic products of the necrosed cancer-mass.

The patient returns on the eighth day for re-examination,

when he is again examined by the two assistants who first saw him, is again weighed, a barium-meal examination is repeated, and any shrinkage of the growth is noted ; the blood picture is again taken and compared, chemical meal tests and blood fæces examination repeated. If the patient had been originally put in the "doubtful" class, a further consultation is now held with the Professor as to whether an operation at this stage is likely to be of benefit, or not. He then goes home, to return again three weeks later, when he is re-examined in the same detail, and when it is decided whether he is to have a second course of *x*-ray treatment or not.

Patients who have been operated on may receive after operation two *x*-ray exposures, with one month's interval between each. Patients, who are hopeless from the operative point of view, with widely spread metastases, receive exposures depending on the extent and degree of metastases present.

Although a specific case of gastric cancer has been cited as an example, I would like to point out that this method of examination, control, and consultation, applies to all cases of surgical cancer in the klinik, no matter in what organ the tumour be situated. It so happens that, owing to Professor Schmieden's individual reputation, one sees more cases of abdominal and rectal cancer in his klinik than of any other organ.

Uterine cases, are of course, never to be seen in the surgical klinik. They are in the gynecological klinik, a separate building, under the control of Professor Seitz, who has just been called from Erlangen to Frankfurt, and who has his own separate *x*-ray installation and "team" for his uterine cancer cases.

General Observations on Cancer Treatment.

All cancer patients, whenever possible, are first submitted to operation, and then to *x*-ray. Pre-operative *x*-ray treatment is frequently utilised. Professor Schmieden greatly favours this "combined method" of treatment.

Sarcomata are treated exclusively by *x*-ray.

Surgical tuberculosis cases are very rarely operated on ; but are treated by *x*-ray, by quartz-lamp, by insolation, etc., and are kept on an open air verandah, day and night.

With the utmost honesty, our instructors told us they could give us no definite pronouncement as to the precise present value of their cancer therapy. The method is in use in this klinik only since 1917, and four years' experience does not constitute a sufficient period of time in which to speak with authority of end results. Their attitude to the problem is thus expressed :—

> In Germany, with these newer methods, we are certainly getting better cancer statistics than with our pre-war surgery, but there is still immense room for improvement. This improvement will come gradually with the use of the intensive anti-cancer campaign now being carried out by means of articles in the lay press, and of lectures to the lay public ; our general practitioniers are sending us cases earlier now than formerly, and we are further educating ourselves as we become better acquainted with our *x*-ray methods. This last means is still in its infancy, and we have much work yet to do before we bring it to perfection. There is as yet no specific cure for cancer, in the Salvarsan sense.

When we had explained to Professor Schmieden the different working system of Irish and German hospitals, he gave us as his distinct opinion that the use of the "deep *x*-ray treatment" for a small hospital was not practicable. "To get good results economically," he emphasised, "the method must be applied on the grand scale, and with a picked staff of whole-time technical experts. In Dublin, one "symmetrie" or "I.R.A." apparatus in a central clinical institute with a properly organised personnel, should suffice for 300-400 surgical beds. To use the apparatus in a small hospital means prohibitive expense. It takes at least six months' study for each individual member of the working team to become sufficiently familiar with the method to obtain satisfactory results.

Our enquiries showed us that even in Germany, the method is still *sub judice*, to this extent, that while all their authorities are at present satisfied that the combination of operative and *x*-ray treatment is giving better cancer results than those heretofore obtained, there still remains a widely expressed difference of opinion as to the actual methods of technique and apparatus to be employed. In other words, there is at

present no standard technique, and no standard apparatus. In Schmieden's klinik (as also in that of Professor Frankl, at Vienna, who was recently in Dublin), the "Symmetrie" apparatus is the machine in use. In Erlangen, Professor Wentz uses an "I.R.A." apparatus, whilst in Heidelberg, Enderlen employs yet another. All these workers are working on the same basic principles, each trying out some modification of technique of his own, in the endeavour to arrive at a definite maximum standard of technique, regardless of cost, which is borne by the state.

MEDICAL EDUCATION.

THE system of medical teaching in Ireland differs from that in England in important particulars. In London each clinical hospital has its attached medical school, fully equipped, which educates the students of that hospital and very seldom those of any other. In Dublin, on the contrary, the hospitals and schools are entirely separate, and a student of any school is free to enter for the whole or any part of his course at any school or hospital he pleases.

Cost of Education in Ireland.

School of Physic, Dublin University ...	£124	17
Royal College of Surgeons' School ...	124	19
National University Colleges	124	19
Queen's University, Belfast	105	0

Cost of Diplomas or Degrees.

Dublin University— £27 (to this must be added £83 4s., the cost of obtaining an Arts degree).		
National University	£19	0
Queen's University, Belfast	19	19
Conjoint Royal Colleges	42	0
Apothecaries' Hall	22	1

Thus, the absolute payment will amount to somewhere between £125 and £233 1s., according to the course chosen. For the Conjoint Colleges the entire cost is £166 19s., taking the minimum mode of payment. So that, assuming that extras or voluntary costs are incurred, the total will vary say, from £170 to £200.

All the schools require fees for each course to be paid in advance.

Women are admitted to all the courses, degrees and licences on the same terms as men.

Date of Entry

The entry of names and commencement of study in Ireland is *supposed* to date from the 1st of October in each year, but entries are accepted for some weeks later. The student must attend three-fourths of the lectures delivered.

Preliminary Examinations.

The first act of the student is to pass a preliminary examination. The next is to commence medical study. This he does by entering for lectures at a medical school. From the school registrar he gets a form of certificate, and his third act is to take it or send it to the Branch Medical Council, 35 Dawson Street, Dublin, unless, as is usually the case, this duty is undertaken for him by the school registrar. He is thereupon placed upon the Register of Medical Students (without fee), and his period of study counts from that date.

The only preliminary examination held specially for medical students is that held conjointly by the Royal Colleges of Physicians and Surgeons, but other examinations—e.g., the public entrance at Trinity College, the matriculation of the National and Queen's Universities, and the Intermediate Examination passes in the required subjects, are accepted as equivalent.

The subjects of examination as prescribed by the General Medical Council are as follow:—(1) English language, including a specified author; dictation, grammar, and composition; also parsing and analysis from a book specified; (2) Latin, including grammar, translation from specified authors, and translation of easy passages not taken from such authors. (3) Elements of mathematics, comprising (*a*) arithmetic, including vulgar and decimal fractions; (*b*) algebra, including simple equations; (*c*) geometry, Euclid, Books I., II., III., with easy deductions. (4) One of the following optional subjects:—(*a*) Greek; (*b*) French; (*c*) German.

THE UNIVERSITIES.

The University of Dublin.

The University of Dublin grant the degrees of M.B., B.Ch., and B.A.O. to students who have obtained their

B.A. degree, and who have been for at least five academic years on the books of the Medical School, and the higher degrees of M.D., M.Ch., and M.A.O., to graduates of certain standing who hold the degrees of M.B., B.Ch., and B.A.O. It does not grant degrees to any but graduates in Arts, and consequently its degrees hold a high rank and are sought for by those who look forward to occupying the best positions in the profession. Diplomas, entitling to registration, are given on certain conditions to non-graduates.

The expense of obtaining the degrees of M.B., B.Ch., and B.A.O. is approximately as follows :—Lectures, £73 10s. ; Hospitals, £55 13s. ; Degree Fees, £17—total, £146 3s.

The expense of the B.A. degree, amounting altogether to £101, should be added, making the total cost £247 3s.

In addition to its ordinary qualifications the University grants the following degrees and diplomas :—

Doctor of Medicine.—To obtain this the candidate must have passed the final examinations and be of M.A. standing. He must send in a thesis for approval. Subsequently the Regius Professor of Physic and an assessor will discuss with him questions connected with the thesis and may examine him *viva voce* on medical subjects of a more general nature. Fee for this degree, £20.

Master of Surgery.—The candidate must be a Bachelor in Surgery of three years' standing, and must then pass an examination in clinical surgery, operative surgery, surgical pathology, surgery, and surgical anatomy (on the dead subject). Fee for this degree, £11.

Master in Obstetric Science.—The candidate must be a B.A.O. of two years' standing, and must produce satisfactory evidence of having been engaged in the study of obstetrics for two years. He is then required to pass an examination in the following subjects :—Practice of midwifery, gynæcology, anatomy of female pelvis, and elementary embryology and clinical gynæcology. Fee for this degree, £15.

Diploma in Gynæcology and Obstetrics.—The candidate need not be a graduate in Arts, but must have been a registered practitioner for at least twelve months and have spent at least one year after registration in the study of obstetrics and gynæcology. During this year's course he must have

been resident for six months in Trinity College and for six months in the Rotunda Hospital.

Diploma in Public Health.—The candidate must be a registered medical practitioner; must have completed, subsequent to obtaining a registrable qualification, four months' practical instruction in a laboratory in practical work in chemistry and bacteriology applied to public health; he must have studied, practically, outdoor sanitary work for six months under an approved officer of health; and have attended, after qualification, for three months the practice of a hospital for infectious diseases.

Degree in Dental Science.—Candidates for the B.Dent.Sc. degree must have taken a degree of Arts and must have had their names in the books of the Medical School for four years. Three examinations must be passed—namely, the Preliminary Scientific at the end of the first year; the Intermediate at the end of the third year; and the Final Dental at the end of the fourth year. The total fees are £309 4s. Candidates for the degree of Master in Dental Science must be Bachelors in Dental Science of at least one year's standing. They will be required to pass an examination in Pathology and Bacteriology, and either to carry out Dental work of an advanced character to the satisfaction of the examiners, or to present a thesis, to be approved of by them, giving evidence of original research on some subject connected with dentistry.

The fee for the M.Dent.Sc. examination is £5, and the fee for the degree is £10.

Full particulars regarding the Medical and Dental Courses and a prospectus of the Courses for the Diploma in Public Health may be obtained by application to the Registrar of the School of Physic, Trinity College, Dublin.

National University of Ireland.

The National University of Ireland confers the degrees of M.B., B.Ch., and B.A.O. on students who have followed the prescribed course for five academic years, and passed the prescribed examinations. At least three years must be spent at one of the constituent colleges of the University—namely, the University Colleges of Dublin, Cork, and Gal-

way. The University also confers the degrees of M.D., M.Ch., M.A.O., B.Sc. (Public Health), D.Sc. (Public Health), B.D.S., Primary degrees, and M.D.S.

The expense of obtaining the degrees of M.B., B.Ch., and B.A.O., in University College, Dublin, is approximately—Lectures, £91; Hospitals, £54 14s.: University fees, £21; total, £169.

The conditions for the higher degrees are :—

Doctor in Medicine.—Candidates may present themselves for the examination for this degree after an interval of three academic years from the time of obtaining the M.B., B.Ch., B.A.O. degrees; but in the case of candidates who have obtained a degree of the University in the Faculty of Arts, or the Faculty of Science, an interval of two academical years is sufficient.

Candidates must at the same time produce a certificate of having been, for at least, two academical years, engaged in hospital or private medical, surgical, or obstetrical practice respectively, or in the military or naval medical service.

Candidates at this examination must answer in Medicine and Pathology.

Master in Surgery.—The following are the subjects of examination :—

Surgery, theoretical and practical, including Ophthalmology and Otology; Surgical Pathology; Surgical Anatomy and Operative Surgery, with the use of Surgical Instruments and Appliances. The other conditions are the same for the M.D. degree.

Master in Obstetrics.—Academic standing is as for the two previous degrees. Each candidate must furnish satisfactory evidence that since he has (1) had personal charge of at least *twenty* cases of labour; and (2) attended during a period of three months the practice of a clinical hospital for diseases of women where at least six beds are in constant occupation or in a special ward of a general hospital, where such cases only are treated, and containing at least six beds in constant occupation.

Candidates at this examination must answer in the following subjects: Midwifery, Diseases of Women and Children, Pathology, the Use of Instruments and Appliances. Fee

for each of the above degrees is £10 10s. In the case of graduates who have matriculated in the Royal University the fee is £5.

Bachelor of Science, Public Health.—A candidate shall not be admitted to receive the degree unless he—(*a*) shall have received the degrees of M.B., B.Ch., and B.A.O., at least one year previously; (*b*) shall have pursued an approved course of study in the Faculty of Medicine; and (*c*) shall have passed the prescribed examination. Fee, £7 10s.

Courses.—In addition to D.P.H. Course; (1) Special Pathology (three months); (2) Bacteriology second course (three months); (3) Advanced Course in Hygiene (three months).

Doctor of Science, Public Health.—The regulations are not yet published. Fee, £10 10s.

Diploma in Public Health.—This Diploma may be granted to matriculated or non-matriculated students of the University who shall have completed courses of study, approved for the purpose, and shall have passed the prescribed examinations; provided that it shall not be granted except to a registered medical practitioner.

The conditions and examinations are similar to those already quoted for the University of Dublin.

Degrees in Dentistry.—Candidates for the degree of B.D.S. shall be required to pass, after matriculation, four University Examinations—namely: A first University Examination; a Second University Examination as for Medical Students; a Third University Examination in Dental Surgery; a Final Examination for the degree of B.D.S. University Fees, £16 10s.

Master of Dental Surgery.—Candidates may present themselves for the examination for this degree after an interval of three academic years from the time of obtaining the B.D.S. degree. Fee, £10 10s.

The University also grants Diplomas in Mental Diseases and Tropical Medicine.

IRISH MEDICAL CORPORATIONS GRANTING DIPLOMAS.

Royal College of Physicians of Ireland.

This College issues a Licence in Medicine and a Licence in Midwifery to registered medical practitioners.

Licence in Medicine.—The subjects of examination are—Practice of Medicine. Clinical Medicine, Pathology, Medical Jurisprudence, Midwifery, Hygiene and Therapeutics.

Licence in Midwifery.—The subjects of examination are—Gynæcology and Midwifery.

Fees.—Fee for the Licence to Practice Medicine, £15 15s. Fee for the Licence to Practise Midwifery, £5 5s.

Membership.—The Membership is open to University Graduates in Medicine and to Licentiates of the Royal Colleges of Physicians of the United Kingdom. The Examinations for Membership are held in February, June and November, and such other times as the President may appoint. Fee to Licentiates of the College, £21 ; to others, £36 15s. Special Examinations £10 10s. extra.

Fellowship.—The Fellowship is open to all Members of the College of one year's standing or over, irrespective of sex. Fee £60. Election is by ballot.

Royal Colleges of Physicians and Surgeons.

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ments for teaching mechanical dentistry are satisfactory to the Council of the College. The instruction may be commenced or attended before the candidates register as medical or dental students. One year's *bona-fide* apprenticeship with a registered dental practitioner, after being registered as a medical or dental student, may be counted as one of the four years of professional study required. There are special exemptions in the case of persons already holding a surgical or dental qualification.

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BOOKS.

THIS MONTH'S SPECIAL REVIEWS.

Le Bactériophage son rôle dans l'immunité. By F. d'Herelle. Paris, Masson et Cie. 12 Fr.

Violent shocks often do harm but occasionally do good, and this work is one we would recommend to any complacent and self-satisfied bacteriologist—if indeed such a person exists—who believes that bacteriology and immunity have reached finality. The shock of reading this book should administer a much needed corrective to his equanimity. We would further recommend the book to all those who have any interest in the science of medicine and who realise that text-books are not the last word but are merely necessary, though unsatisfactory, substitutes for monographs by authors who are experts in the subjects dealt with by them.

In making these recommendations we are not to be taken as agreeing with everything that the author states: in some respects we most emphatically disagree, but the careful reading of d'Herelle's experiments and conclusions cannot fail to make one pause and consider certain subjects which, up to the present, have either been unknown or have aroused no particular interest.

"Le Bactériophage" is a monograph based on an enormous mass of experimental work done by the author and his fellow-workers. The greater portion of this work has already been published in various journals, but here one can, for the first time, get a connected account of d'Herelle's views on the bacteriophage.

Competent bacteriologists disagree with many of the author's conclusions, but as regards the fundamental phenomena, which are of the most novel and surprising nature, every observer who has devoted a little time and trouble to the work has been forced—even against his pre-formed opinions—to agree that d'Herelle's findings are easily capable of reproduction. The reviewer has obtained results on which d'Herelle's written account and illustrations might have been based.

d'Herelle's interest was first aroused by the following experiment. He took a small amount of a stool of a patient convalescent from dysentery (Shiga type) and emulsified it in saline. Next day the saline suspension was filtered through a porcelain filter which retained all ordinary bacteria. A small amount of the filtrate was added to a broth culture of Shiga's bacillus. In a few hours this broth culture had become clear, and, when attempts were made to obtain sub-cultures, it was found that all the bacteria were dead. If this lysed culture was, in turn, filtered through a porcelain candle and a few drops of the filtrate added to a new broth culture of the same bacillus, clearing of the latter occurred. This phenomenon could be reproduced, apparently indefinitely, in series. So far from becoming weaker by these successive passages the substance which produced the solution of the bacteria became stronger, solution occurring more quickly than with the first filtrate obtained from the patient's fæces. This primary observation was repeated many times by d'Herelle and later by bacteriologists in almost every country. Whatever the explanation may be, there is no doubt about the facts.

The next step was also of great interest. Active filtrate was added to a broth culture and the mixture incubated. At intervals of one hour one drop was removed and spread on the surface of agar. These sub-cultures were incubated and examined the next day. The first showed a uniform culture of the bacillus except for two circular spots, about 2 m.m. in diameter, which were apparently bare. The second tube showed 6 similar spots, the third 100, while the fourth had no visible growth of bacteria. By this technique it has been possible to demonstrate in fæcal filtrates a solution-causing substance when this was too feeble to cause complete lysis and clearing of all the bacteria in a broth culture. If, on spreading on the surface of agar, clear spaces were seen, the substance was present and, by successive passages through a series of broth cultures, it was possible to exalt its activity so that ultimately it was able to clear completely suspensions of bacteria. With this technique one is now able to examine stools, and to detect in them the presence of the solution-causing substance with ease and certainty. Such substances

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have been found in the stools both of the healthy and of those suffering from many diseases. The substance may be active against one or more types of bacteria. The anti-Shiga substance is the one most easily demonstrated but those active against the other dysentery bacilli, against members of the typhoid group or against other organisms have been found. The activity is not necessarily limited to one type of organism. In one found by the reviewer, for example, the substance isolated was very active against B. dysenteriæ (Shiga), moderately against Flexner and Y. dysentery bacilli, very slightly against B. paratyphosus B, and not at all against B. coli, B. typhosus and B. paratyphosus A.

The explanation of this lysis of bacteria is exceedingly difficult. Lysis might be effected by—1, some substance found in the intestine ; 2, autolysins formed by the bacteria under the influence first of all of some intestinal substance ; or 3, by a living organism which thrives at the expense of the bacteria. The first view is untenable for the lysin has been found active after 1,500 passages, the amount transferred each time being $\frac{1}{1000}$ c.c. Many observers incline to the second opinion, but d'Herelle believes implicitly in the third, and has given the name of Bacteriophagum intestinale to the organism. In either case the difficulties are great. Any conservative bacteriologist must, at first, be disinclined to believe in the possibility of a living organism so small as to be able to act as a parasite on bacteria and yet so highly specialised in function, but we must remember that occasionally the truth is highly improbable. d'Herelle's opponents also have great difficulty in making their theory fit in with all the observed facts, and yet it is hard to imagine any other possible solution. d'Herelle's chief grounds for his belief are the following :—1, the appearance on agar of clear spaces indicating that the substance acts as a solid body, not diffused throughout the medium in solution. 2. his observation of minute granules which he describes as penetrating and multiplying in the bacterial body. 3, the fact that the activity of the filtrate is destroyed by heat and by various disinfectants not inhibiting other enzymes. 4, no increase in activity and no solution of the bacteria occurs unless the bacteria are living. 5, the activity of a filtrate acting on a culture increases in

waves, the period being about one to one and a half hours. This he explains as the period necessary for one bacteriophage to increase in a bacterium to 15 to 25 individuals when the bacterium disrupts, liberating the young bacteriophages. 6, the possibility of "educating" the substance to act on other species of bacteria—an exclusive property, according to d'Herelle, of living matter. 7, various rather complicated experiments in complement fixation and immunity reactions.

The reviewer refuses to commit himself for or against d'Herelle's theory of the existence of this obligatory bacterial parasite, the Bacteriophagum intestinale. d'Herelle's writing is convincing and his logic apparently sound, but the time is not yet ripe for a definite opinion.

For d'Herelle the bacteriophage is the most important factor in immunity. Just as bacteria wage war against man, so the bacteriophage wages war against bacteria. The bacteriophage may have its virulence exalted or attenuated, the bacteria may be conquered or, by producing a more resistant type, be victorious. "L'histoire de la maladie est en définitive l'histoire de la lutte entre le Bactériophage et une bactérie." "En un mot, la guérison se produit toujours par suite d'une exaltation de la virulence du Bactériophage, suffisante pour lui permettre de parasiter et de détruire les bactéries pathogènes implantées dans l'organisme. La mort survient, soit par suite de l'inertie du Bactériophage soit par suite de l'acquisition par la bactérie de l'état réfractaire, ce qui permet à cette dernière, dans l'un et l'autre cas, de se développer sans entraves."

d'Herelle is, as one would expect, optimistic as to the utility of his bacteriophage both therapeutically and prophylactically, but one must confess that the accounts which he gives of cases treated by "bacteriophage-therapy" are less numerous and less convincing than are the accounts of his "in vitro" experiments. A given bacteriophage can, however, be administered to a man by mouth and be isolated subsequently from the stools, so possibly it may have a future in medicine. Let us hope that it will not be brought into the disrepute which has followed the commercialisation of vaccine therapy.

d'Herelle's outlook is wide, and he predicts the day of wholesale immunity conferred by the bacteriophage. "Nous

pouvons donc envisager la possibilité de l'immunisation collective de la population car il serait facile de mélanger à l'eau potable des cultures du Bactériophage, surtout dans les agglomérations urbaines où l'eau est distribuée par canalisation."

Finally, let us recommend once more this book as one to be read carefully and thought over. Even to those disagreeing completely with d'Herelle's conclusions it will be found of great interest.

J.W.B.

Therapeutic Immunisation. By W. Ford Robertson. Edinburgh : E. and S. Livingstone.

The author of this book reminds us of the character in "Alice in Wonderland" who would not be ruled by mere words, but who ruled them instead and made them mean exactly what he desired. For this reason the work tends to confuse the reader who must, before understanding it, learn the terminology. As an example we may give the word "hæmolysis" as used in the classification of streptococci. For Robertson, hæmolysis does not mean the liberation of hæmoglobin from red blood cells, but something quite different. So streptococcus pyogenes is either hæmolytic or non-hæmolytic but the pneumococcus is always hæmolytic. Robertson recognises not only the four classical strains of pneumococci but also the "pneumococcus of pernicious anæmia" and the "pneumococcus of rheumatoid arthritis."

Those who have some experience of vaccine therapy or rather of "therapeutic immunisation" may become jealous on reading of the author's many successes. Some may even be sceptical. Gastric and duodenal ulcers, appendicitis, chronic intestinal stasis, neuralgia, neuritis, neurasthenia, exophthalmic goitre, disseminated sclerosis, and various acute insanities, to mention but a few, are cured, or at least improved, by "therapeutic immunisation." Staphyloccus aureus vaccine is a specific for chilblains and B. coli vaccine for varicose ulcers. These last two are, however, examples of the pharmaceutical and not the specific action of vaccines. If the local disease yields no organisms, satisfactory growths of suitable bacteria may be obtained from the nose, mouth,

or throat, from the urine, or from the stools. "Anærobic diphtheroid bacilli" and "Streptococcus fæcalis hæmolyticus" are particularly potent bacteria in the author's hands.

We cannot recommend this work for general reading by the profession. One reason is that the clinicians might become dissatisfied with their present bacteriologists. There are also other reasons.

Preventive Medicine and Hygiene. By MILTON J. ROSENAU. 3rd Edition. New York and London. D. Appleton and Co. 45s. net.

We have nothing but praise for this work, and congratulations for its author. A book of 1,567 pages which costs 45s. is not one which will be purchased by many without good reason. Yet three editions of this book have been exhausted, and the present is the fourth. The medical public have evidently reviewed this book, and have thoroughly approved of it. We do not profess to have read through this new edition, but we have carefully examined several of its sections and have found them clear, thoroughly revised and modern. It is not a student's book, but to any doctor who is concerned in any aspect of preventive medicine or hygiene it will be invaluable. The paper, printing, diagrams and illustrations are above criticism.

Colloid Chemistry of the Proteins. WOLFGANG PAULI. J. and A. Churchill. 1922.

THIS small book represents Part I. of a work by the director of the Physico-Chemical Biology Laboratory in the University of Vienna. It has been primarily derived from a course of lectures delivered in 1912-13, and represents much of the work done on the colloid proteins by Pauli and his associates. Designed to meet the requirements of the chemical physiologist it naturally offers little inducement to the dilettante student who wishes to keep himself level with the trend of modern research and achievement in this particular branch. The iso-electric reaction is fully dealt with in relation to the proteins. Full tables of results with accompanied detailed calculations and curves are given.

Intrinsic Cancer of the Larynx and the Operation of Laryngo-Fissure." By Irwin Moore. University of London Press, 1921.

The operation of laryngo-fissure has contrived to itself an interesting and unusual history. First suggested so long ago as 1812, it was not actually performed until 1833, and during its earliest years gave promise of great success. Later on, however, owing to faulty technique and the choice of unsuitable cases, it proved disappointing and suffered disrepute until Durham and Butlin re-established its value by greater care in execution and pre-operative diagnosis. Since then, a steady increase in successes has eventually established laryngo-fissure as one of the bright spots in the treatment of cancer. Such being the position to-day, one eagerly looks forward to the publication of a book which deals with so important an operation from all points of view. In Dr. Irwin Moore's modest sized volume we have all that there is to be known up to the present about laryngo-fissure. A most cordial welcome should be extended to a book which carefully deals with all the practical points before and after the performance of the operation. Not the least interesting is the historical section, which deals fully and concisely with all the early attempts to open the larynx for intrinsic growths.

One point might be specially referred to—the question of anæsthetic. In the author's opinion preference would appear to be given to chloroform. If we might suggest an omission in such an excellent book, it is that the merits of ether given by the colonic method have not been placed on record. In several cases of laryngo-fissure recently performed both for foreign bodies and growths, we have found this a method of preference allowing of an easy and peaceful narcosis, while reducing the duties of the anæsthetist near the operation field, to the occasional administration of a few drops of ether by way of the tracheotomy tube—undoubtedly a distinct benefit where fine work needs all the room possible.

We would again extend our cordial welcome to this monograph, which should be in the hands of all laryngologists, and which must be looked upon as one of the most valuable contributions to the surgery of the larynx which has appeared for many years. J.S.J.

Essays on Surgical Subjects. By Sir Berkely Moynihan. W. B. Saunders and Co., 1921.

This is one of those books which unopened awakens keen anticipation. One counts beforehand upon a style that will be lucid and epigrammatic, a style in fact which has helped to shift the centre of English surgery to Leeds. These essays include a tribute to Murphy, "the greatest clinical teacher of his day," which is written with an enthusiasm that gives the reader a sense of personal loss. This is followed by the "Ritual of a Surgical Operation," a title alone worth much to those who teach surgery. If the master discards gloves, the pupil may neglect soap. Ritual ingrains reverence.

Dealing with gastric ulcer Moynihan states that no diagnosis of chronic ulcer should now be confidently accepted unless the ulcer is revealed by *x*-ray examination, or is displayed upon the operation table.

Other essays treat of "Intestinal Stasis,"—a temperate account of a subject that has suffered from over-statement. "Acute Emergencies of Abdominal Disease"; "The Gifts of Surgery to Medicine" in which insistence is laid upon the pathology of the living; "The Surgery of the Chest" a valuable summary of personal experience and European teaching.

These essays, like the plays of Wilde, should be read separately. Iteration dulls the flash of epigram.

Clinical and Operative Gynæcology. By Professor J. M. Munro Kerr, M.D., F.R.C.P.S. Professor of Obstetrics and Gynæcology, Glasgow University, etc. Cr. 8vo. Pp. 832 + XVI. London: Henry Froude and Hodder and Stoughton. 1922.

It is a well-known fact that many great actors have only one part in which they are really great. Professor Munro Kerr has written a very great work which will last: it is not the volume at present under review—it *is* his operative midwifery. We took up *Clinical and Operative Gynæcology* with a gladsome heart—we put it down with a sigh—not of content, but with a certain degree of grief, for the book just fails to get home.

Although we know and appreciate the author's worth, his great experience would have been more in evidence had the style been more impersonal. The work is divided into three parts (1) Clinical Gynæcology, 560 pages. (2) Medical Treatment and Remedies, 18 pages. (3) Operative Gynæcology, about 200 pages. There are valuable special articles on development, nervous disorders, venereal diseases, anæsthesia and transfusion. We are not sure that the arrangement of certain points simplifies the comprehensiveness of the text, *e.g.*, there is no description of the uterine ligaments in the anatomy section, but we are referred to the section on displacements ; and in dealing with tuberculosis of the tubes we are referred back to the chapter on general tuberculosis. Voluminous references in a work of this kind are unnecessary, but we are surprised to find no reference to the work of Frankl and others on the corpus luteum. A classification of ovarian cysts would have been valuable. The paragraphs on sterility will be improved in succeeding editions, for at present they seem to be incomplete. The author suggests a very simple description of the supports of the uterus and vagina. He divides these supports into four tiers (1) Levator-coccygeus muscles. (2) Paracervical tissue. (3) Uterine ligaments. (4) Cervical muscles. Nothing could be better than this.

At some utopian day authors of text books in gynæcology will give a clear definition of the normal position of the uterus. The student is expected to know this, and yet it is either omitted as here, or given vaguely as by many authors. We are amazed to find that the dangerous old-fashioned septic method of replacing the uterus with a sound is recommended, described, and illustrated by two figures.

Another point which requires more agreement is the definition of a tumour of the vulva ; the author puts under this heading femoral hernia, hæmatoma vulvæ, varicose veins ; many professors will refuse to accept these conditions as tumours.

There is a thoroughly sound and comprehensive article on chronic endometritis which explains logically the old and the modern ideas. We fear that the treatment of acute salpingitis will not be clear to the puzzled practitioner, but the

chronic condition is explained in a manner which could not be excelled.

"We are perfectly justified in discussing this complication under a special heading." Yes, perimetritis and parametritis might be discussed under a separate heading if a convincing differential diagnosis could be given, but it is not given here, and we are sceptical if it can be given at all. It may be thought that we have criticised some points in this work too severely, but a gynæcologist of the standing of Professor Munro Kerr must stand, and is well able to stand criticism. In the last part operations are dealt with magnificently; they are described more in the form of an atlas than anything else. Most known operations are considered, and this section alone makes *Clinical and Operative Gynæcology* a valuable addition to the library of the gynæcologist.

B.S.

The Transactions of the Edinburgh Obstetrical Society. Vol. XVI. Session 1920-21. Edinburgh: Oliver and Boyd 1922. Pp. 148 + XXVII.

As a record of work done, this volume compares favourably with past records, but we regret that our plea when reviewing the 39th volume that cross-compliments be omitted has not been acceded to. We consider that the blue pencil of the editor should strike out the numerous congratulations which are scattered through the various valuable discussions.

Probably the contribution which will appeal most to the reader is that of Dr. Haultain on "Twilight Sleep"; this well-known writer has now had a very large experience of the method, and gives it his unqualified approval—a sentiment which was shared by the speakers on the paper. Eclampsia which might be called the fashionable obstetric subject at present has two papers, one in its relation to concealed accidental hæmorrhage, the other to placenta prævia.

Dr. Young's communication on an organism obtained from carcinomatous growths is republished in these transactions, and there is a useful contribution to the literature of uterine prolapse.

B.S.

A Short Practice of Midwifery for Nurses. By HENRY JELLETT, M.D., F.R.C.P.I. Gynæcological Surgeon Canterbury Hospital, New Zealand, etc. Pp. 427 + XIII. Sixth edition revised. London: J. H. Churchill, 1922. Pp. 427, XII.

DR. JELLETT has emigrated to New Zealand since the last edition of this popular work was published. The present revised edition is up to the standard of its predecessors, and some necessary alterations and additions have been made. We are confident that the well-deserved popularity of the previous issues will be maintained.

B.S.

ABSTRACTS OF CURRENT LITERATURE.

GYNÆCOLOGY AND OBSTETRICS.

LEE, GEO. : *The Test of Labour : Results in* 100 *Consecutive Deliveries.* "Surg. Gyn. Obst. XXXV. I. 63."

DANFORTH : "*Is Conservative Obstetrics to be Abandoned ?*" Amer. Jour. Obst. and Gyn., III. 6. 609.

WE believe and hope that the boom in surgical obstetrics has reached its zenith. It is satisfactory to find two of the premier journals in the obstetrical world containing pages on this subject. Lee makes a very strong plea for a test of labour. He believes that this is obtained by allowing labour to proceed, until childbirth either result spontaneously, or from operative assistance that reinforces the natural powers so that birth is through the natural passages. Of course, when there are obvious obstacles to delivery no patient should be submitted to the test. The paper shows most satisfactory results in an analysis of 100 consecutive cases.

Danforth asks "Is conservative obstetrics to be abandoned ?" He analyses 500 cases and proves the efficacy of conservatism to the hilt. Among other points he deals with the Potter elective version and demonstrates that his (Danforth's) fœtal mortality is 1.4 per cent. as compared with 7.5 per cent with the Potter method. These two papers are published about the same time. Obviously America is recovering from the operative disease which was never very pronounced in Ireland.

BETHEL SOLOMONS.

HORNER, D. : *Rœntgenography in Obstetrics.* "Surg., Gyn. Obs. XXXV. 1. 67."

THIS paper suggests that *x*-rays may be used in obstetrics for (1) diagnosing early pregnancy. (2) fœtometry before induction of labour, and to diagnose monsters before performing Cæsarean section. (3) pelvic deformities and measurements. (4) injuries to the newborn. He states there is no danger to mother or child. Davis (p.119 ibid.) remarked that he frequently found it necessary to have teeth *x*-rayed in pregnancy, thus avoiding the results of toxæmia from septic dental foci.

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KENNEDY, RONGY AND ROSENFELD: *Sterility.* "Amer. Jour. Obst. and Gyn. 111. 6. 607." "Amer. Jour. Obst. and Gyn. 111. 6. 496."

WE are glad to find that our work here has induced gynæcologists in America to try and find a suitable method for keeping the tubes open after resection. Kennedy uses Cargile membrane instead of catgut which is our choice; in order to direct it through the tubes he suggests a hollow silver probe through which some piano wire is directed and draws the membrane after it; the method is best understood by the illustration which accompanies the article. In a paper by Rongy and Rosenfeld a plea is made for transuterine insufflation of the tubes with Co_2. The technique is given and makes interesting reading, but we believe there is less danger to the patient in performing laparotomy in doubtful cases. In a series of 100 patients there were no deaths, but the following complications occurred (1) syncope in an obese patient. (2) a second case of syncope. (3) an acute inflammatory condition in the left fornix.

BETHEL SOLOMONS.

PARDEE: *Cardiac Failure in Pregnancy.* "Amer. Jour. Obst, and Gyn. 111. 6. 496."

PARDEE considers that aortic regurgitation is more dangerous than mitral stenosis, but is more concerned with the symptoms or signs of failure than with the nature of the disease. Morphine with atropine is advised in labour; in addition, phlebotomy and digitoxin gr. $\frac{1}{50}$ intravenously are recommended. Ether preceded by a small amount of chloroform is the best anæsthetic. If decompensation should occur in labour it is necessary to do Cæsarean section unless forceps can be applied. The treatment is the same in pregnancy except that oxygen may be given to relieve cyanosis.

BETHEL SOLOMONS.

RILEY: *An Unusual Case of Extrauterme Pregnancy.* "Amer. Jour. Obst. and Gyn. 111. 6. 630.

RILEY records notes of a most unusual case. The woman gave the history of a ruptured tubal pregnancy which was not operated on. After this she had four full-term children. Then she consulted Riley who examined, and decided that she had a myoma of the uterus. At operation the mass proved to be the bones of a fœtus and much foul-smelling material. On assembly of the bones, the skeleton was a fœtus about $7\frac{1}{2}$ months. The patient recovered after a stormy convalescence.

BETHEL SOLOMONS.

DAVIS: *Neoplasia of the Kidney.* "Amer. Jour. Obst. and Gyn. 111. 5, 478."

THIS paper reports five primary renal tumours which have been carefully studied to exclude metastatic origin. They consist of (1) Papillary epithelioma. (2) Hypernephroma. (3) Malignant teratoma. (4) Squamous celled carcinoma. (5) Lympho-blastoma. Davis states that the developmental history of the renal tissues is yet incomplete, and at many points theoretical. The diagnostic symptomatology is often indefinite. Clinical and pathological investigation of renal tumours should be carefully made and reported.

BETHEL SOLOMONS.

PHYSIOLOGY.

*Recent Experiments on the Pituitary**

SINCE Paulesco first, followed by Cushing, removed the entire pituitary in animals, it has been held that such removal results in death. These operators used the temporal approach. Later Aschner, using the buccal route, showed that pituitary extirpation is not necessarily fatal. Camus and Roussy have confirmed this finding, verifying the complete removal of the gland by histological examination. Where death ensued, it was due as a rule to hæmorrhage or meningitis.

It has been suggested that survival is explained by the presence of aberrant pituitary substance, yet this work seems to prove that as a differentiated organ the hypophysis is not essential to life.

Polyuria.

Camus and Roussy have further shown that the polyuria which follows many pituitary operations in animals is not due to a lesion of the pituitary itself, but to injury to the part of the brain to which the gland is attached. This area, the tuber cinereum, is a mass of grey matter in the floor of the third ventricle, between the optic chiasma in front, and the corpora mammillaria behind.

At the centre of the tuber is a funnel-like projection, the infundibulum, which narrows to form the pituitary stalk. Spiegel, Zweig and Lhermitte have recently described four paired nuclei in this area; one above the chiasma, one more laterally placed, the supraoptic nucleus, and external to this, the nucleus proprius of the tuber. Lastly, a paraventricular nucleus which lies between the ependymal lining of the third ventricle and the anterior pillar of the fornix. These nuclei are connected with the pons and globus pallidus.

**IIIe Réunion Neurologique Internationale Anuelle*, Paris, June 3rd and 4th, 1922.

Camus and Roussy found that permanent diabetes insipidus occurred in a dog in which the pituitary was unharmed, but where experimental puncture had injured the nucleus proprius of the tuber. In another experimental animal with polyuria of five months' duration and an adiposo-genital syndrome, the pituitary was intact, but the two nuclei of the tuber and the paraventricular nuclei had been injured.

A further series of experiments showed that when the entire pituitary was removed, no polyuria resulted unless the region of the tuber was involved, nor did any puncture remote from the tuber produce polyuria. The paired nucleus proprius of the tuber is very superficial, and thus polyuria may follow a superficial injury; an animal of five kilograms weight may, for example, pass three litres of urine daily during many months.

Glycosuria was only rarely produced in these experiments; when it occurred it was thought to be due to a basal rather than to a pituitary lesion. It is noteworthy too, that hydro-carbon tolerance was not affected by lesions limited to the gland or by its complete removal. Hanchett, *American Jour. Med. Science*, May, 1922, p. 685, describes an independent series of experiments along similar lines. These include stimulation of both lobes of the gland directly with a heated rod, and indirectly, by filling the sphenoidal siuns with hot wax. In only one animal of this series did polyuria occur, and in this the cautery had failed to reach the pituitary, but had injured the corpora mammillaria. Electrical stimulation with induced currents produced polyuria, but as it is difficult to limit their diffusion, the urinary increase cannot with certainty be set down to stimulation of the gland.

In every case where there was traction upon the pituitary stalk, polyuria ensued. Cushing has observed that the incidence of polyuria was greater in operated pups than in adult dogs, and Hanchett suggests that, with a temporal approach, the upward displacement of the brain required to secure effective exposure in pups must be relatively greater, and involve more traction upon the pituitary stalk. Stalk-traction thus seems to explain the "unaccountable postoperative polyuria of extreme grade" in a number of Cushing's cases. Hanchett's work thus confirms in a general way that of Camus and Roussy, which is also supported by the experiments of Bailey and Bremer in Belgium. Hanchett, however, finds that cauterisation of the mammillary bodies produces polyuria, while Camus and Roussy restrict the polyuric area to the region of the tuber.

These findings already receive a measure of clinical confirmation, though few pathological reports have been sufficiently discriminating to bear useful testimony regarding these precise experiments. Hagenbach in 1882 described a case of tuberculosis meningitis with polyuria, in which a caseous nodule was found in the infundibulum, associated with dilatation of the fourth and lateral ventricles. Lhermitte has described a case of diabetes in insipidius in which there

was a syphilitic lesion of the nuclei of the tuber, the pituitary being unaffected. Others have described lesions, with polyuria, varying from complete destruction of the pituitary to disease of the stalk alone. Simmonds collected ten cases metastatic tumours of the pituitary, only three of which showed polyuria. In one case of this series *without* polyuria the entire gland was destroyed, except for a small piece of the anterior lobe; in another, however, with normal excretion the pars nervosa, the pars intermedia *and* the infundibulum had been replaced by the tumour. Demole of Geneva, on the other hand, reports polyuria in a case of dementia precox with an adiposo-genital syndrome, which showed no lesion of the pituitary nor of the tuber, but in which the interstitial cells of the testis were definately altered.

Earlier workers have stated that polyuria can be produced by the stimulation of other regions of the brain than that of the pituitary. Claude Bernard in 1849 secured an increased output of urine by injuring the floor of the fourth ventricle in front of the spot for glycosuric puncture. Kahler produced in rabbits a lasting polyuria, with polydipsia, by injecting concentrated silver nitrate solution in small quantity into the corpus trapezoides of the pons, and into the lateral part of the medulla. (The connections of pons with the nuclei of the tuber are suggestive in regard to this.)

The Adiposo-genital Syndrome.

This syndrome has hitherto been considered as a manifestation of hypopituitarism but Camus and Roussy find that when the pituitary is removed from dogs without injury to the base of the brain no genital atrophy, obesity, nor increased hydrocarbon tolerance occur. A pure lesion of the base, however, may produce an increase in weight of seven kilograms in three weeks.

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Asclepios Habana.
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American Journal of Medical Sciences.
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Medical Clinics of North America.

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Medical Journal of Australia.
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BELGIUM :—

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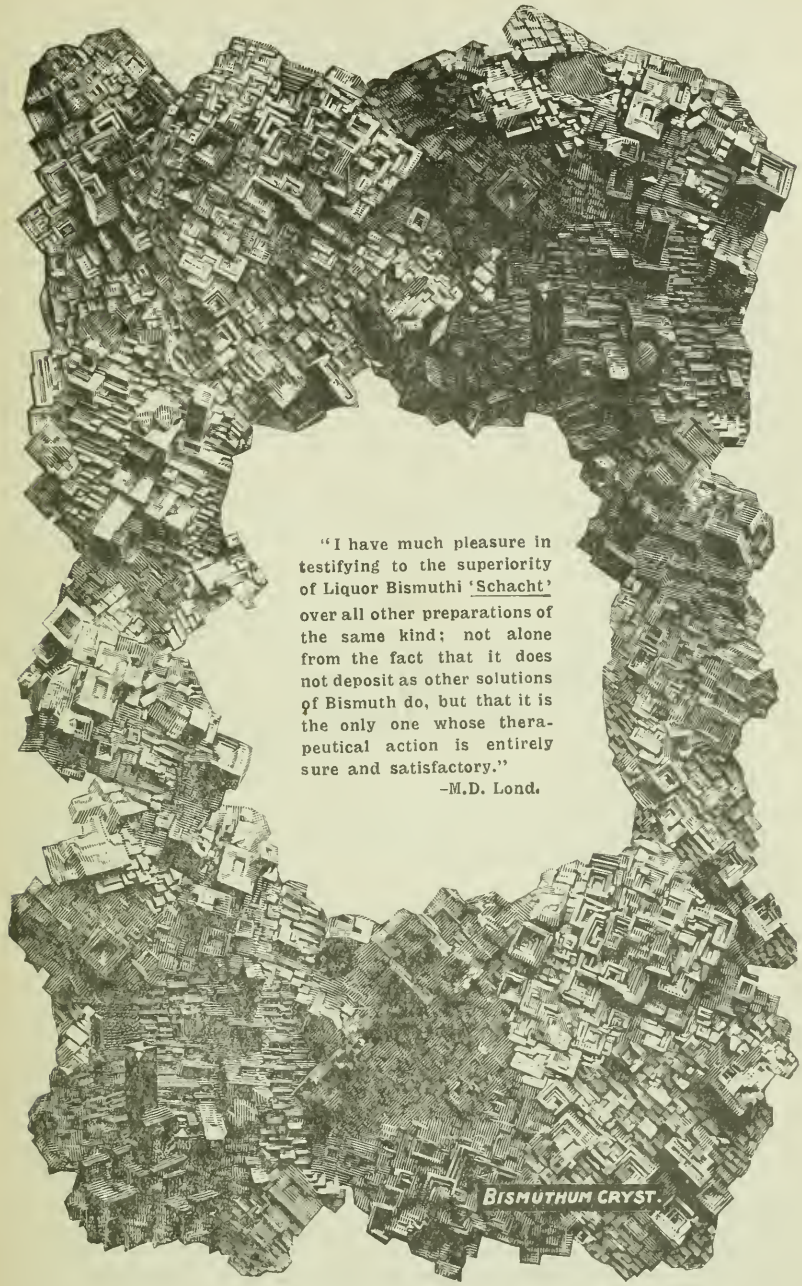
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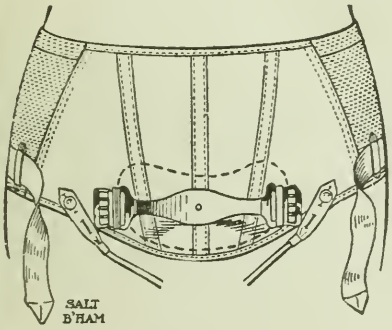

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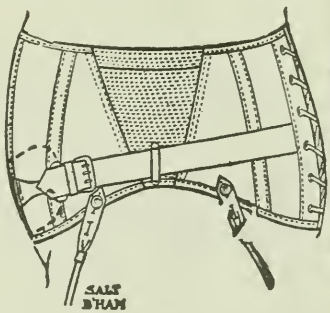

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